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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/828,247	04/21/2004	Jun-Yeob Lee	1514.1043	4847

49455 7590 11/15/2006

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EXAMINER

YAMNITZKY, MARIE ROSE

ART UNIT	PAPER NUMBER
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1774

DATE MAILED: 11/15/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/828,247

Applicant(s)

LEE ET AL.

Examiner

Marie R. Yamnitzky

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 August 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) 5-7, 23 and 24 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4, 8-22 and 25 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>21 Apr 2004 & 20 Jan 2006</u> . | 6) <input type="checkbox"/> Other: _____ |

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1. Applicant's election with traverse in the reply filed on August 23, 2006 is acknowledged. Applicant elects the species in which the compound is a compound represented by the formula L_2ML' where L and L' are identical and each is a ligand provided by the compound represented by formula 5, and M is Ir. (Applicant refers to the compound of formula 5 as "1-phenylquinoline". The compound of formula 5 is "1-phenylisoquinoline".) The traversal is on the ground(s) that the number of species is sufficiently small that there would not be a burden on the examiner to search and examine all species together. This is not found persuasive because there are over 800 different compounds encompassed by the formula L_2ML' wherein L and L' are the same or different and L, L' and M are selected from the possibilities set forth in the election of species requirement. There are 784 compounds within the scope of present claims 6 and 23 (196 different combinations of ligands x 4 different metals) and 56 compounds within the scope of present claim 14 (14 ligands x 4 metals). The requirement is still deemed proper and is therefore made FINAL.

2. Claims 5-7, 23 and 24 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to nonelected species, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on August 23, 2006.

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3. Claims 10 and 18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

There is no antecedent basis for the red and green “phosphorescent” emitting layers “I” as recited in claim 10. Claim 10 depends from claim 4, which depends from claim 3. While claim 3 provides antecedent basis for a red emitting layer and a green emitting layer, these layers are not referred to as “phosphorescent”, and “I” is not recited.

Similarly, there is no antecedent basis for the red and green “phosphorescent” emitting layers as recited in claim 18.

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-3, 8, 11-16, 19, 21, 22 and 25 are rejected under 35 U.S.C. 102(b) as being anticipated by Kamatani et al. (US 2003/0068526 A1).

Kamatani et al. disclose iridium compounds represented by present formula L2ML' and/or L3M for use in the emitting layer of an organic electroluminescent display device.

See the entire publication. In particular, see Fig. 1(a)-(c), paragraphs [0001], [0032]-[0040], [0101]-[0109], [0125]-[0126], [0150], [0174]-[0176] and [0189]-[0199], and the Tables beginning on page 11.

Kamatani et al. disclose applicant's elected species. Kamatani's Example Compound No. 1 is the compound of present Chemical Formula 27 as shown in present claims 15 and 25. Kamatani's Example Compound No. 1 meets the limitations of the phosphorescent dopant as defined in present claims 1, 2 and 12-15, and meets the limitations of the emitting compound as defined in present claims 22 and 25.

Kamatani et al. also disclose many other compounds within the scope of the phosphorescent dopant as defined in present independent claims 1 and 12, and the emitting compound as defined in present independent claim 22.

For example, each of the compounds set forth in the Tables beginning on page 11 of the prior art in which M is Ir, m is 3, A is Ph and B is Iq2 is a compound represented by L2ML' wherein L and L' are identical and is a compound represented by L3M, wherein M is Ir and each ligand is a ligand provided by the compound of present Chemical Formula 5.

As another example, each of the compounds set forth in the Tables beginning on page 11 of the prior art in which M is Ir, m is 2, n is 1, A is Ph, B is Iq2 and the partial structure ML'_n is represented by formula (4) as shown in paragraph [0040], such as Kamatani's Compound Nos. 31-36, is a compound represented by L2ML' wherein L and L' are not identical and at least L is a ligand having 15 or more carbon atoms in the ligand.

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As another example, each of the compounds set forth in the Tables beginning on page 11 of the prior art in which M is Ir, m is 1, n is 2, A is Ph, B is Iq₂ and the partial structure ML'_n is represented by formula (4) as shown in paragraph [0040], such as Kamatani's Compound Nos. 75-80, is a compound represented by L₂ML' wherein L and L' are not identical and at least L' is a ligand having 15 or more carbon atoms in the ligand.

Note that the specific prior art compounds referenced in this rejection do not represent an exhaustive list of all of Kamatani's compounds that are within the scope of compounds of present formulae L₂ML' and/or L₃M.

With respect to present claims 3 and 16, see paragraphs [0032]-[0033] for example. The limitations recited in claims 3 and 16 pertain to a conventional structure for full-color display devices.

With respect to present claims 8, 11, 19 and 21, see Fig. 1(a)-(c) and paragraphs [0102]-[0107] for example.

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 3, 4, 9, 10, 16-18 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kamatani et al. (US 2003/0068526 A1) as applied to claims 1-3, 8, 11-16, 19,

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21, 22 and 25 above, and further in view of Park et al. (US 2003/0042848 A1) and Yu et al. (US 2004/0094768 A1).

Kamatani et al. disclose iridium compounds represented by present formulae L2ML' and/or L3M for use as red-emitting phosphorescent materials in full-color display devices.

Kamatani et al. do not explicitly teach a full-color display device having red, green and blue emitting layers in which the blue emitting layer is a fluorescent emitting layer as required by present claims 4, 9, 10, 17, 18 and 20.

Park et al. and Yu et al. disclose full-color display devices having red, green and blue emitting layers in which at least one emitter is a phosphorescent emitter and at least one emitter is a fluorescent emitter. The blue emitting layer may be a fluorescent emitting layer. In Park's publication, for example, see Figures 4, 5 and 7-10, paragraphs [0013], [0018]-[0021], [0035]-[0040] and [0042]-[0051], and claims 1, 2, 8 and 9. In Yu's publication, for example, see Figures 1A-1E, 2A-2D and 3, and paragraphs [0001], [0037]-[0039], [0043]-[0045], [0048]-[0049] and [0059]-[0063]. The polymers taught in paragraph [0059] of Yu's publication are known fluorescent emitters.

Further with respect to the requirement of claims 9 and 20 for a hole blocking layer, Park et al. teach the use of a hole blocking layer over the phosphorescent emitter layers. For example, see paragraphs [0037] and [0040]. Note that paragraph [0040] implies that the red and green emitter layers, instead of the red and blue emitter layers, may be the phosphorescent emitter layers. Yu et al. also teaches that an electron injection/transport layer may be deposited over each of the red, green and blue emitter layers, and materials taught in paragraph [0063] for the

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electron injection/transport layer include materials known in the art to provide a hole blocking function.


Further with respect to the requirement of claims 10 and 18 that the blue fluorescent emitting layer be formed on an upper part of red and green phosphorescent emitting layers, Yu et al. teach that the blue emitter layer may be formed over the red and green emitter layers. For example, see paragraph [0048].

A full-color organic electroluminescent display device comprising a phosphorescent dopant as defined in present independent claims 1 and 12 was known in the art at the time of the invention as demonstrated by Kamatani et al. The further structural features of the device as required by present claims 4, 9, 10, 17, 18 and 20 were known in the art for full-color organic electroluminescent display devices comprising a phosphorescent dopant as demonstrated by Park et al. and Yu et al. It would have been obvious to one of ordinary skill in the art at the time of the invention to make a full-color display device using a phosphorescent dopant as taught by Kamatani et al. utilizing structural features known in the art of full-color display devices such as those disclosed by Park et al. and Yu et al.

8. Any inquiry concerning this communication should be directed to Marie R. Yamnitzky at telephone number (571) 272-1531. The examiner works a flexible schedule but can generally be reached at this number from 7:00 a.m. to 3:30 p.m. Monday-Friday.

The current fax number for all official faxes is (571) 273-8300. (Unofficial faxes to be sent directly to examiner Yamnitzky can be sent to (571) 273-1531.)

MRY
November 13, 2006


MARIE YAMNITZKY
PRIMARY EXAMINER
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